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III. *An Account of some of the Electrical Experiments made by Granville Wheler, Esq; at the Royal Society's House, on May 11. 1737. drawn up by C. Mortimer, M. D. R. S. Secr.*

EXPERIMENT I.

A Large Octavo Book was placed horizontally upon silk Lines, and the upper Surface strewed with several Pieces of leaf Brass, all or the greatest Part of which flew upwards, from one another, and off the Book, upon holding an excited Tube at a little Distance underneath the Book.

EXPERIMENT II.

Two Lines were extended horizontally the whole Length of the Library being between 30 and 40 Feet, distant from one another about two Feet at one End, and meeting together in a Knot at their other Ends, the whole Lines being Packthread, except five Feet of silk Line tied at each of the separated Extremities, as well as at the Knot where the other Ends united, in order to stop the Current of the *Effluvia*. Upon the united Extremities was placed horizontally a Piece of Card about two Inches square, on which were strewed Pieces of leaf Brass: The excited Tube being held at a little Distance under the separated Extremities of the Packthread, the leaf Brass on the Card at the other End flew upwards, and off the Card.

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E X P E R I M E N T I I I .

Five glass Receivers placed one within another upon an electrical Cement of Bees-wax and *Venice* Turpentine, were all exhausted: In the innermost a fine white Thread about five Inches long, was suspended from the Crown of it, by the Assistance of a little Cement made of Bees-wax and Oil. Upon moving the excited Tube up and down near the Side of, and horizontally to and from the outward Receiver, the suspended Thread manifestly made many Vibrations corresponding to the Motions of the Tube.

E X P E R I M E N T I V .

An electrical circular Cake of Bees-wax and Rosin, ten Inches in Diameter, was placed horizontally upon a tall glass Receiver near three Feet high, such as is made use of for the dropping the Feather and Guinea. This Cake being, the preceding Evening about Eight o'Clock, warmed with an hot Iron held over it, and then struck perpendicularly all over its Surface with the Hands in parallel Directions, and so left cover'd with a thin Pasteboard, was about Twelve o'Clock next Day at Noon gently uncover'd, and an ivory Ball about one Inch and half Diameter placed in the Centre, a fine white Thread about ten Inches long, with a small Piece of Cork, the Size of a Pin's Head, at the End of it, being held between the Finger and Thumb, was gently let down upon the Vertex of the Ball; it first flew off at some Distance, and then made several pretty regular Revolutions from West to East about it, in the Form of a Circle.

E X P E R I M E N T V.

The Ball was removed, and the Cake again warmed and excited as before; after which the Ball was replaced at a little Distance from the Centre, nearer to Mr. *Wheler*; the Consequence of which was, that the pendulous little Body moved with a direct Motion as before, but in an Orbit that resembled an Ellipse, having the Ball in one of its *Foci*.

E X P E R I M E N T VI.

Two Bullets fixed on little Stands of Cork about one quarter of an Inch high, were placed upon the Cake, each about an Inch distant from the Centre of it, and in a Line with the Centre and Mr. *Wheler*; the pendulous Body described an Orbit resembling an Ellipse, having the two Bullets for its *Foci*, and the Motion was direct from West to East.

E X P E R I M E N T VII.

Instead of the Cork, another pendulous Body of a cylindrical Form was made use of, tied to a fine white Thread about twenty Inches long; the Cylinder consisted of two circular Bases of Paper half an Inch Diameter, but all cut away except a Ring and a small Bar cross the Middle, through which Basis six equal fine Threads passed at equal Distances from one another, knotted at the lower Base separately, and joined together in one Knot at about half an Inch Distance from the upper Base, from which Knot proceeded the long Thread. This Body moved from West to East about the central Ball, and at the same time discover'd

a Motion about its own Axis in the same Direction; but after two or three Turns generally stopt, and turn'd the contrary Way, which seem'd to arise from the untwisting of the Thread.

EXPERIMENT VIII.

A Thread about a Foot long, was suspended from an horizontal Line of Packthread, parallel to it an excited Tube placed erect in a Stand, the Thread approached the Tube, and continued in a State of Attraction: A Thread of the same Length, suspended from a silk Line, vibrated backward and forwards two or three times, being first attracted, and then repelled, and continuing some time repelled; but upon joining the Top of the Tube, by a Packthread going round it, to the Loop of the Thread; the Thread continued constantly in a State of Repulsion, shewing no Tendency to Attraction.

EXPERIMENT IX.

Two black Silks, about the same Length with the Thread in the preceding Experiment, were suspended by Loops from an horizontal red silk Line, at the Distance of about half an Inch from each other; upon holding the excited Tube under them, the Silks swelled out from one another, and then jump'd away on each Hand to the Distance of two Feet.

EXPERIMENT X.

A circular Board of nearly the same Diameter with the electric Cake, was suspended horizontally by six silk Lines, tied to one silk Line which was brought

over a Pulley at the Top of a Frame of Wood, so as to be moved up and down. From the Board hung six fine white Threads about eighteen Inches long, fixed by a little Cement at equal Distances from each other. The Board being let down till the Ends of the Threads were about an Inch distant from the electric Cake, which was directly under, and had the ivory Ball on its Centre; the Threads all approached towards the Centre of the Cake, both when the Ball was in the Centre, and when taken away, keeping an equal Distance from the Centre, and from one another, as long as a Packthread joined the Circle of Board and the Frame to keep it steady; and upon removing the Ball out of the Centre towards the Circumference, the Figure lengthen'd, the Threads next the Ball advancing nearer the Circumference; when the Ball was placed at about an Inch Distance from the Circumference, the Thread that was before nearest the Circumference, whipp'd between the Ball and the Centre, so as to be almost in the same Plane with its two neighbouring Threads, the Figure form'd by the Extremities resembling an Ellipse with one End cut off: But when instead of the Packthread that join'd the Board to the Frame, a blue silk Line was tied in the same manner in all respects, the Threads, instead of coming towards the Centre, all flew away at a great Distance from the Cake, and from one another.

It ought to be observed in the Experiments of the circular Motion of the pendulous Body, that Mr. *Wheeler's* Hand seem'd as steady as possible, except in the first Experiment, when a little Trembling appear'd; Mr. *George Graham* taking a very good Method to observe

observe it, by keeping his Eye fix'd upon a Point at a considerable Distance, in the same Line with the End of Mr. *Wheler's* Finger, and his own Eye.

Yet when Mr. *Wheler* had finish'd the Experiments to the Satisfaction of all present, Mr. *Hawskbee*, Mr. *George Graham*, and Dr. *Mortimer*, held the Thread with the pendulous Body over the Cake with the Ball on its Centre, after the Cake had been excited by Mr. *Wheler* ; but they had no regular Revolutions at all, though several very manifest Motions were made with the Hand, to try if a projectile Motion might by that means be given to the pendulous Body. Mr. *Wheler* had tried the same thing with his Servant ; from whence it is reasonable to conclude, that it is necessary, that the same Person who excited the Cake should likewise hold the Thread ; as if there were some Analogy between the *Effluvia* excited by the clapping of the Hand on the Cake, and the *Effluvia* which may be communicated along from the Hand which holds the Thread to the Piece of Cork at the End of it. And this seems to be the Reason of what the late Mr. *Grey* told me, *viz.* That there was something in the human Hand essential to the Experiment, which he had not yet found in any other Supporter of the Thread.